ABSTRACT

A stereo headphone employing a standard stereo headphone plug is adapted for automatically hearing a monaural signal at both earpieces, when accessing a typical monaural source. In the first embodiment of the invention, an impedance element couples the signal from a first acoustical driver that receives the monaural signal from the stereo plug tip, to a second acoustical driver that is connected to the stereo plug ring and normally receives no signal when plugged into a conventional monaural audio source output jack. The magnitude of the coupling impedance is selected with respect to the impedance of the acoustical driver so that the reduction in loudness at the second earpiece due to the signal voltage drop across the coupling impedance is not perceptible to the listener. This will occur when the reduction in loudness at the second earpiece is less than the threshold of perceivable loudness reduction at one ear when there is no reduction in loudness at the other ear. The effect of the coupling impedance, when listening to a stereo audio source is insignificant, firstly, because the two stereo channel signals appear at their respective drivers with virtually no attenuation due to the coupling impedance. Secondly, although the coupling impedance does contribute a slight amount of additional crosstalk between the stereo channels, the magnitude of the increase in crosstalk is dependent upon the ratio of the coupling impedance to the output impedance of the stereo source. A typical stereo source for which the use of this headphone is intended has an output impedance so low compared to the coupling impedance that the increase in crosstalk is too small to be perceptible as affecting the stereo separation or the stereo imaging afforded by the stereo source. In the second embodiment of the invention two equal impedance elements couple the monaural signal from the stereo plug tip to each acoustical driver. This equalizes the loudness of the monaural signal heard at each earpiece and slightly reduces the level of one stereo channel with respect to the other. Crosstalk and stereo imaging are virtually unaffected, as with the first embodiment.